

REMARKS

The Applicant respectfully requests reconsideration of the objections and rejections set forth in the Office Action dated February 20, 2003.

The Objection to the Specification:

The Specification has been objected to for the formalities set forth in the Office Action. In particular, the Examiner believes that the terminology is inconsistent in that the reference numeral designations for "21" and "22" both reference two elements each. In response, the Applicants have amended the specification as set forth above. Accordingly, the dispensing actuator is merely a type of dispensing source, while the aspiration actuator is merely a type of aspiration source.

The Rejection under 35 U.S.C §112:

Claims 1, 2, 5, 6, 12, 14 and 59 stand rejected over 35 USC §112, second paragraph, as being indefinite for the reasons set forth in the Office Action. The Applicants have amended these claims in a manner they believe are sufficiently definitive to meet the requirements of §112. In particular, the Applicants note that in claim 1, the aspiration actuator and the dispensing actuator are included in the preamble, and are thus not part of the invention. While some of the claims may include limitations that interact with these actuators, none of the actuators are positively claimed. Regarding the discrete sample path, the applicant has more definitively recited the limitations so as to not include the dispensing and aspiration actuators, the dispensing conduit or the aspiration conduit. Withdrawal of the §112 rejection is respectfully requested.

The Rejection under 35 U.S.C §102(b):

The Examiner has rejected claims 1-3, 5-13 and 59-62 under 35 USC §102(b) as being anticipated by Naono, U.S. Patent No. 4,120,661. In view of the above-indicated amendments and the forgoing remarks, the Applicants respectfully disagree.

Briefly, as amended, claim 1 now recites a hybrid valve apparatus for use with an aspiration actuator and a dispensing actuator to transfer fluid from a reservoir to a test site on a substrate surface. The valve apparatus includes a valve assembly movable between an aspiration condition and a dispensing condition, and a manifold device defining a fluid aspiration conduit and a fluid dispensing conduit. The fluid aspiration conduit includes a first aspiration port in fluid communication with the aspiration actuator, and a second aspiration port in selective fluid communication with the valve assembly. This enables selective aspiration of a liquid sample slug from the reservoir through a dispensing orifice of a fluid communication structure. This structure defines a discrete sample path extending from the dispensing orifice and through at least a portion of the manifold device for fluid communication with the valve assembly, when the valve assembly is in the aspiration condition. The fluid dispensing conduit includes a first dispensing port in fluid communication with the dispensing actuator, and a second dispensing port in selective fluid communication with the valve assembly to selectively dispense at least one droplet of the liquid sample slug from the dispensing orifice of the communication structure when the valve assembly is in the dispensing condition. In accordance with the present invention, when the valve assembly is oriented in the aspiration condition, the sample path is out of fluid communication with the dispensing actuator and, while in the dispensing condition, the sample path is out of fluid communication with the aspiration actuator.

Accordingly, the hybrid valve apparatus provides a manifold and single valve assembly that enables aspiration into and dispensing from a dispensing orifice of a discrete path, a primary passage portion of which extends at least partially through the manifold. Applying only two positions of the single valve (i.e., the aspiration condition and the dispensing condition), the assembly can aspirate sample into the sample path through the dispensing orifice (aspiration condition), and then dispense sample from the sample path through the same dispensing orifice (dispensing condition). When the sample path of the communication structure is fluidly coupled to the aspiration actuator, in the aspiration condition, the path is fluidly decoupled from the dispensing actuator. In a similar arrangement, when the sample path of the communication structure is fluidly coupled to the dispensing actuator, in the dispensing condition, the path is fluidly decoupled from the aspiration actuator. As set forth in the present pending application at page 11, line 23 through page 12, line 1:

[A]t no time will the valve assembly allow the sample path be in fluid communication with both the aspiration actuator and the dispensing actuator, simultaneously. This arrangement is beneficial in that the dispensing source can not be contaminated by the sampled fluid due to the isolating of the dispensing source from the sample path during the aspiration of the fluid into the sample path. Moreover, each sample path is operatively switched between the aspiration actuator and the dispensing actuator enabling the micro-metered, non-contact parallel distribution of the reagents or sample fluid to the test site.

Naono, in contrast, discloses a sampling device that requires two independent valve systems (i.e., the rotor valve 32, 33, together with changeover valve 47) to perform the task of the single valve application of the present invention. Referring to FIGURES 4(a)-4(e), this sequence best illustrates the operation of the system of Naono.

As mentioned in your summary of Naono, after the rotor valve aligns ducts 40, 41 with 35a of the sample reservoir, and the changeover valve aligns ports A and

B, the aspiration actuator 46 is operated to aspirate sample through inlet port 39 (FIGURE 4(b)). Subsequently, the sampling device of Naono rotates the rotor valve to deadend inlet port 39 at the rotor interface between valve bodies 31, 32 (FIGURE 4(c), and orient changeover valve 47 to align ports A and D, and align ports B and C (FIGURE 4(e)). Aspiration actuator 46 and dispensing actuator 48 are fluidly coupled, and operated to dispense fluid from ducts 40, 41 and feedline 45 through the distal nozzle and into beaker 49.

Accordingly, the sampling device of Naono does not aspirate the sample into and dispense the sample from the same dispensing orifice, as set forth in the present invention. Naono in fact aspirates through mid-inlet port 39, and aspirates through the distal nozzle at the beaker 49. Thus, the Naono assembly is much more complex, and requires many more components to perform similar fluid manipulation tasks.

Moreover, during the dispensing phase, both the aspiration actuator 46 and the dispensing actuator 48 are fluidly coupled through the changeover valve 47 (FIGURE 4(d)). In the dispensing condition of the present invention, by comparison, when the sample path is fluidly coupled to the dispensing actuator, in the dispensing condition, the path is out of fluid communication with the aspiration actuator. Finally, the manifold/valve arrangement of the present invention enables the elimination of one valve device, as compared to the sampling device of Naono that requires two valves to perform the same dispensing function.

In view of the foregoing arguments and amendment, withdraw of the §102(b) rejection is respectfully requested.

New Claims 59-88:

The Examiner has indicated that claims 4 and 14 would be allowable if rewritten in independent form, and to overcome the §112 rejections. In response, the

applicant has added new claim 66, which is essentially claim 4 rewritten in independent form, and new claim 78, which is essentially claim 14 rewritten in independent form. Allowance of these claims is respectfully requested.

Conclusion

In light of the above amendments and remarks, the Applicants respectfully request that the Examiner reconsider this application with a view towards allowance. It is believed that all claims now pending and all new claims fully and patently define the subject invention over the cited art of record and are in condition for allowance.

If the Examiner has any questions concerning this case, the Examiner is respectfully requested to contact Michael L. Louie at (510) 843-6200.

The Commissioner is hereby authorized to charge any additional fees, including any extension fees, which may be required or credit any overpayment directly to the account of the undersigned, No. 50-0388 (Order No. INVDP001).

Respectfully submitted,
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